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## DISPERSAL OF TWO SPECIES OF HARVEST MICE (*REITHRODONTOMYS*) BETWEEN THE HIGH PLAINS AND ROLLING PLAINS OF TEXAS

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The fulvous harvest mouse (*Reithrodontomys fulvescens*) and the western harvest mouse (*R. megalotis*) are two species of harvest mice that inhabit the Plains Country of Texas (Hall, 1981; Spencer and Cameron, 1982; Webster and Jones, 1982; Choate et al., 1992; Davis and Schmidly, 1994). The two species are known to occur sympatrically in the Trans-Pecos region of Texas (Schmidly, 1977; Davis and Schmidly, 1994; Yancey et al., 1995), but in the remainder of the state, their ranges were thought to be allopatric. *R. fulvescens* ranges from East and South Texas, across much of the Edwards Plateau, and onto the Rolling Plains where it reaches its western limits in north-central Texas (Schmidly, 1983; Choate, 1991; Davis and Schmidly, 1994; Goetze, 1995). Conversely, *R. megalotis* was thought to be restricted to the Trans-Canadian Panhandle and the large mesa of the Southern High Plains known as the Llano Estacado (Jones et al., 1988; Choate, 1991; Choate et al., 1992; Davis and Schmidly, 1994). The purpose of this report is to document new distributional records for *R. fulvescens* and *R. megalotis*, and to examine the implications of these records regarding the dispersal of the two species.

### METHODS AND MATERIALS

This study was done in conjunction with a comprehensive study of the small mammals of Caprock Canyon Trailway, also referred to as the "railtrail." This stretch of land, which is a unit of Caprock Canyons State Park and is under the jurisdiction of the Texas Parks and Wildlife Department, is approximately 100 km of former railway that recently was converted into a hiking and horseback trail. The trail runs from the town of South Plains in Floyd County, northeast through Briscoe County, and east to the town of Estelline in Hall County. Park property includes approximately 30 m on either side of the former rail tracks. The habitat along the trail primarily is grassland dominated by Johnson grass (*Sorghum halepense*). Several interspersed stands of mesquite grassland, juniper woodland, and deciduous woodland occur to the sides of the trail, but grassy areas are continuous throughout the length of the trail. In most areas of the trail, these grassy areas are in sharp contrast to the developed, heavily grazed, or plowed lands on either side of the trail. Moreover, the trail cuts

a smooth path through the rough breaks of the Llano Estacado escarpment onto the Rolling Plains, providing a potential corridor for dispersal of small mammals.

From December, 1995, to May, 1996, small mammals were sampled using Sherman live traps baited with rolled oats. Traplines consisted of 40 traps set at 8 to 10 m intervals. Traps were set approximately one hour before sundown and retrieved approximately one hour after sunrise the following morning. Animals acquired were identified and voucher specimens (standard museum skin and skull) were prepared. Tissues (muscle, liver, heart, and kidney) were collected from all specimens and frozen at  $-80^{\circ}\text{C}$ . All localities are based on uncorrected Universe Transverse Mercator (UTM) coordinates taken from a hand-held Geographic Positioning System (Magellan, Meridian) and should be considered accurate  $\pm 100\text{m}$ . Voucher materials (TTU numbers) and frozen tissues (TK numbers) are deposited in the Collection of Recent Mammals in the Natural Science Research Laboratory of the Museum of Texas Tech University.

## RESULTS

Twenty-one localities were sampled along the rail trail, 11 of which yielded a total of 30 harvest mice. Data regarding these specimens are outlined in the following accounts.

*Reithrodontomys fulvescens*.—A total of four specimens of *R. fulvescens* was obtained from two localities. Three individuals were taken from a site in Floyd County, and one specimen was acquired from a place in Briscoe County. Each was taken in grassland habitat composed of various medium to tall grasses. Other rodents taken in association with *R. fulvescens* included *Chaetodipus hispidus*, *R. megalotis*, *Peromyscus leucopus*, and *Onychomys leucogaster*.

Specimens examined.—(4). Briscoe County: Caprock Canyons State Park, UTM: 14 309371E 3802661N, 1 (TTU 69191; TK 51021). Floyd County: Caprock Canyons State Park, UTM: 14 304503E 3790783N, 3 (TTU 69407-69409; TK 51097-51099).

*Reithrodontomys megalotis*.—Twenty-six specimens of *R. megalotis* were taken from 11 localities, two of which were in Briscoe County, seven in Floyd County, and two in Hall County. Seven of the sites were in prairie grassland with short to tall grasses, two were in mesquite grassland, one was in deciduous woodland with medium to tall grasses, and one was in juniper woodland with short to medium grasses. Rodents taken in sympatry with *R. megalotis* were *C. hispidus*, *R. fulvescens*, *Peromyscus attwateri*, *P. leucopus*, *P. maniculatus*, *Baiomys taylori*, *Onychomys leucogaster*, *Sigmodon hispidus*, and *Mus musculus*.

Specimens examined.—(26). Briscoe County: Caprock Canyons State Park, UTM: 14 308231E 3800150N, 1 (TTU 69192; TK 51016); Caprock Canyons State Park, UTM: 14 309371E 3802661N, 2 (TTU 69193-69194; TK 51022-51023). Floyd County: Caprock Canyons State Park, UTM: 14 291349E 3790467N, 3 (TTU 69346-69348; TK 51030-51032); Caprock Canyons State Park, UTM: 14 297852E 3789434N, 2 (TTU 69349-69350; TK 51033-51034); Caprock Canyons State Park, UTM: 14 303525E 3790262N, 1 (TTU 69624, TK 51122); Caprock Canyons State Park, UTM: 14 303929E 3790498N, 2 (TTU 69411-69412; TK 51090-51091); Caprock Canyons State Park, UTM: 14 304503E 3790783N, 4 (TTU 69413-69416; TK 51100-51103); Caprock Canyons State Park, UTM: 14 305689E 3794462N, 1 (TTU 69623 TK 51118); Caprock Canyons State Park, UTM: 14 307003E 3797530N, 1 (TTU 69410; TK 51081). Hall County: Caprock Canyons State Park, UTM: 14 321822E 3808037N, 7 (TTU 69351-69357; TK 51057-51063); Caprock Canyons State Park, UTM: 14 325380E 3807957N, 2 (TTU 69358-69359; TK 51016-51017).

## DISCUSSION

The specimens of *R. fulvescens* from Briscoe and Floyd counties, and the specimens of *R. megalotis* from Briscoe, Floyd, and Hall counties represent new records for these counties, respectively. Of greater importance, with these records, the ranges of both species in the central Panhandle of Texas are more clearly defined, *R. fulvescens* to the west and *R. megalotis* to the east. In addition, this is the first report of sympatric occurrence of the two species in the Panhandle.

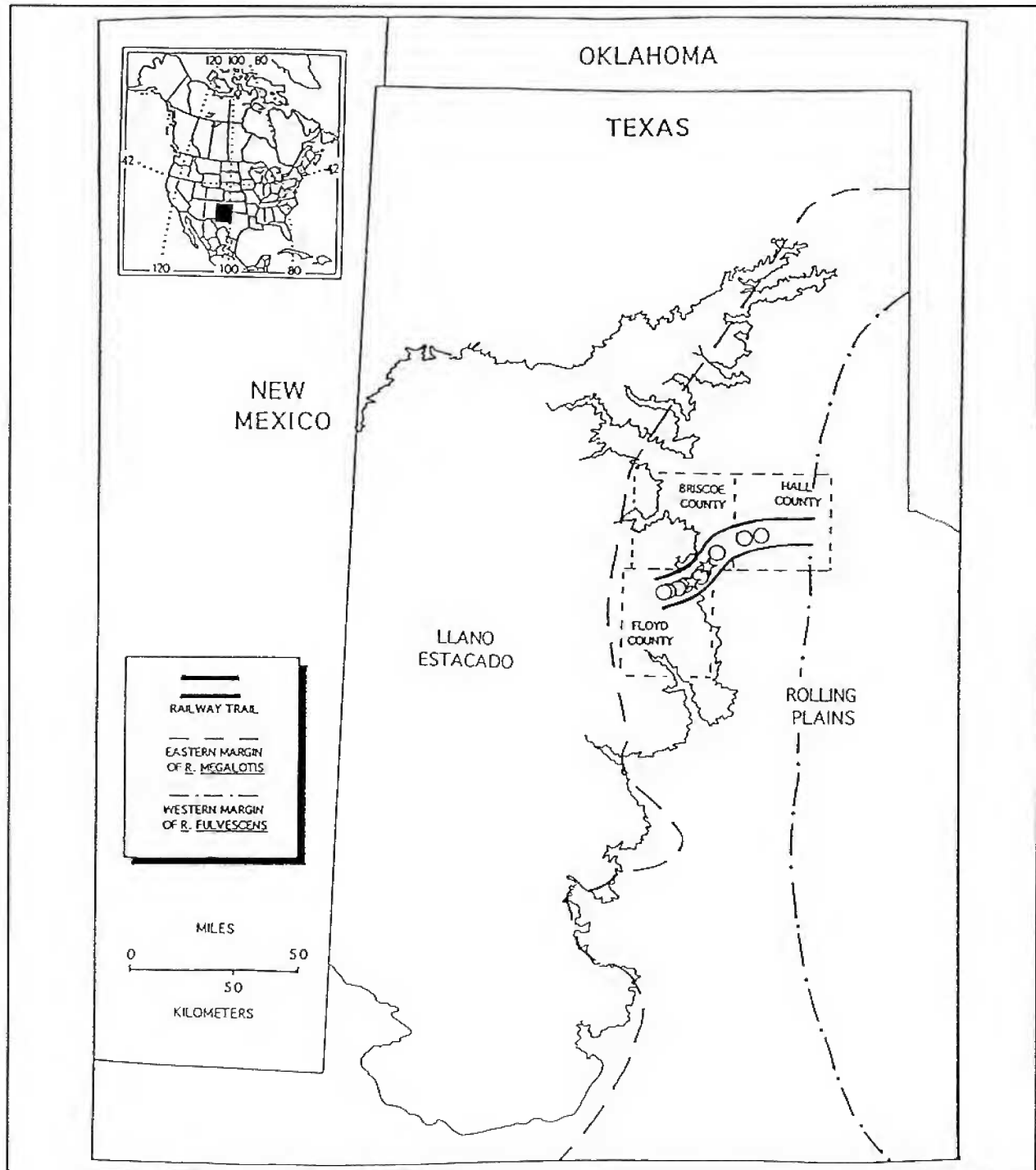


Figure 1. Map of the northwest Texas plains depicting the dispersal of *Reithrodontomys megalotis* and *R. fulvescens* between the Llano Estacado and Rolling Plains. Sites along the railtrail where both *R. megalotis* and *R. fulvescens* were acquired are indicated by a star (☆), whereas sites where only *R. megalotis* was taken are indicated with a circle (○). Distributional margins of the two species modified from Davis and Schmidly (1994) based on known specimens. Width of railway trail not to scale.

These new records beyond the periphery of the previously known range limits of *R. fulvescens* and *R. megalotis* suggest that these harvest mice are utilizing the railtrail as a two-way corridor for dispersal (Fig. 1). The trail is a continuous stretch of habitats dominated by grasses, which are the preferred habitats of both species (Spencer and Cameron, 1982; Webster and Jones, 1982; Jones et al. 1983; Schmidly, 1983; Jones et al., 1988; Davis and Schmidly, 1994). In addition, the trail provides a gently sloping connection between the Llano Estacado and the Rolling Plains, which otherwise, in this area, is separated by rough breaks. Sites off the trail but in the general vicinity have been trapped substantially in recent years (Yancey et al., 1996), and yet no records of these two mice have been published, thus further supporting the notion that harvest mice are utilizing the trail as a route of dispersal.

Easterly dispersal of *R. megalotis* off the Llano Estacado recently has been noted in areas where such a corridor does not exist. Yancey et al. (1995) reported the emigration of *R. megalotis* from the Llano Estacado onto the Rolling Plains further south, and Goetze (1995) noted the expansion of the range of this species onto the Edwards Plateau, even further south. However, in these areas the breaks of the Llano are much less rigorous, and therefore, are less effective as barriers. In such instances, a corridor such as that provided by the railtrail would not be necessary for dispersal. When investigating the dispersal of the pygmy mouse (*Baiomys taylori*), Choate et al. (1990) found movement of this species between the southeastern edge of the Llano Estacado and the western margins of the Rolling Plains and Edwards Plateau. Also, they acknowledged that dispersal of pygmy mice in this area was possible due to the mild breaks of the southeastern Llano. However, they suggested the possible use of railroads as corridors for dispersal of *B. taylori* across the rougher breaks to the north.

The records of *R. fulvescens* are of even greater significance than those of *R. megalotis*. The three specimens of *R. fulvescens* acquired from Floyd County were taken in the breaks of the Llano Estacado, a geographic region from which this species was thought to be excluded. *R. fulvescens* previously has been reported from just east of the Llano Estacado immediately to the north of Briscoe County in Armstrong County (Davis and Schmidly, 1994). However, it is not clear on what evi-

dence this record was based (Choate et al., 1991). Therefore, our records from Briscoe and Floyd counties represent the first and second verified records of *R. fulvescens* from the central Panhandle. They are, therefore, important in defining the western limits of this mouse in that part of Texas. Furthermore, because each specimen of *R. fulvescens* was taken in association with *R. megalotis*, the sympatric occurrence of these two species in this area is verified.

Because of the apparent importance of the grassy habitats adjacent to the railtrail for small mammals, it seems appropriate to manage the area as a grassland corridor. Continued studies will result in additional information on the impact of the presence of grassland habitats along the railtrail on the biogeography of mammals in the region.

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